

**METHODS AND APPARATUS FOR PRESERVING PRECISE EXCEPTIONS
IN CODE REORDERING BY USING CONTROL SPECULATION**

ABSTRACT

[0049] Methods and apparatus for preserving precise exceptions in code reordering by using control speculation are disclosed. A disclosed system uses a control speculation module to reorder instructions within an application program and preserve precise exceptions. Instructions, excepting and non-excepting, can be reordered by the control speculation module if the instructions meet certain conditions. When an excepting instruction is reordered, a check instruction is inserted into the program execution path and a recovery block is generated. The check instruction determines if the reordered excepting instruction actually needs to generate an exception. The recovery block contains instructions to revert the effects of code reordering. If the check instruction detects the need for an exception, the recovery block is executed to restore the architectural state of the processor and the exception is handled.